

Patent Claims

1. Cylinder head for internal combustion engine with metallic valve seat ring, thereby characterized, that the valve seat ring is formed of a thermal sprayed homogeneous layer of a Co or Co/Mo base alloy, wherein the sum of the Co and Mo content is above 50 wt.% and the Fe content is below 5 wt.%.
2. Cylinder head according to Claim 1, thereby characterized, that the Co/Mo base alloy includes a Cr content of 5 to 30 wt.%.
3. Cylinder head according to Claim 1, characterized by a nominal chemical composition in wt.% of Mo 25 to 35%, Si 1 to 4%, Fe less than 3%, Cr 5 to 20%, C 0.05 to 1%, remainder Co, and trace components of less than 1%.
4. Cylinder head according to Claim 1, thereby characterized, that the component of free Mo and/or Co not bound in the Co/Mo base alloy is below 10 Vol.%.
5. Cylinder head according to Claim 1, thereby characterized, that the porosity of the sprayed layer is below 5%.
6. Cylinder head according to Claim 1, thereby characterized, that the vickers hardness of the sprayed layer is above 650 HV.
7. Cylinder head according to Claim 1, thereby characterized, that the thickness of the sprayed layer is in the range of 0.5 to 2 mm.
8. Cylinder head according to Claim 1, thereby characterized, that the content of the metal oxides or metal nitrides in the sprayed layer lie below 2 wt.%.

9. Process for producing a thermal sprayed valve seat ring, thereby characterized, that the valve seat ring is deposited, by an arc wire spray process with at least two filled wires and/or composite wires, as a homogenous layer of a Co/Mo base alloy upon a substrate material, wherein a substantial component of the Co in the deposited layer is supplied by the jacket of the filled wire and/or the matrix of the composite wire.
10. Process for producing a thermal sprayed valve seat ring, thereby characterized, that the valve seat ring is deposited, by an arc wire spray process of a Co-rich fill wire and a Cr- and/or Ni-rich filled or solid wire, as a homogenous layer of a Co/Mo base alloy upon a substrate material, wherein the substantial proportion of the Co in the deposited layer is supplied by the jacket of the filled wire.
11. Process according to Claim 9 or 10, thereby characterized, that the jacket or the matrix of the Co rich filled wire or composite wire has a Co content above 90 wt.% and a Fe content in the range of 0.5 to 5 wt.%.
12. Process according to Claim 9 or 10, thereby characterized, that the core of the Co rich fill wire is formed essentially by the components Mo, Cr, Ni and/or Si.
13. Process according to one of Claims 9 through 12, thereby characterized, that the filled wire is produced from a Co strip or a Co pipe and that the further metallic components are in powder form.
14. Process according to one of Claims 9 through 13, thereby characterized, that greater than 95% of the material of the filled wire, composite wire or solid wire transitions into the molten phase during the arc wire spray process.
15. Process according to one of Claims 9 through 14, thereby characterized, that the carrier gas in the arc wire spray process is N₂ or Ar.